

REMARKS

Claims 21-23 and 25-34 are pending in this application. Independent claim 21 is amended for clarity, and to incorporate elements of claim 24. Claim 24 is accordingly cancelled herewith. It is believed that the above amendments and the following remarks address each of the claim rejections presented in the Office Action dated 18 September 2006. Numbered subheadings used below correspond with the order of issues presented in the aforementioned office action.

1. Prosecution Re-Opened

We thank the Examiner for indicating appellant's reply options.

2. Claim Rejections – 35 U.S.C. §103

(Marinelli/Place)

Claims 21 and 27-31 stand rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,148,271 ("Marinelli"), in view of U.S. Patent No. 6,450,953 ("Place"). Respectfully, we disagree with and traverse the Examiner's rejection, since Marinelli in view of Place does not render the claims *prima facie* obvious. The following is a quotation from the MPEP setting forth the three basic criteria that must be met to establish a *prima facie* case of obviousness:

"To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the references or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations." MPEP, §2142, citing *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

It is fundamental to 35 U.S.C. §103 that each and every limitation of the claim elements must be taught or suggested; however, the Marinelli and Place patents fail to teach or suggest all the limitations of claims 21 and 27-31, whether taken alone or in combination.

The Examiner has noted that Marinelli does not teach that the at least one relay unit wirelessly transmits the received data to the base station. However, the Examiner uses Place to provide wireless transmission, stating:

"Place et al. teach this feature...It would have been obvious...to incorporate Place et al. teaching into Marinelli's teaching because it would transmit the data wirelessly to the base station. Therefore, the wiring costs and complications of the relay system would be obviated." Office Action p. 3, third paragraph.

Respectfully, we must note that Marinelli does not teach a relay unit at all, whether wired or wireless. Once again, the Examiner has taken one structure in Marinelli (monitor unit 108) and argued that it is two different things – a base station and a relay unit. If we follow the Examiner's line of reasoning, then Marinelli teaches a monitor unit that receives information and then transmits the received information to itself. This is technically illogical. We respectfully direct the Examiner's attention to the arguments presented in the Appeal Brief of 06 March 2006, where Appellants point out the Marinelli does not teach any relay unit.

Since Marinelli does not teach a relay unit at all, the Examiner's cost and complication arguments appear invalid. We submit that adding a new component (Place's signal transfer unit 12) to Marinelli would increase costs and complications, not obviate them. Consider the complexity of Place's signal transfer unit 12:

"In the preferred embodiment, the front end receiver comprises a coil assembly having three orthogonal coils 20, 22 and 24...The coils are linked to a receiver 26 for filtering and amplifying an incoming signal as well as conducting analogue to digital conversion before passing the signal on to a digital signal processor, DSP 28. The DSP can be a Motorola 56303 device, for example. In turn, the signal from the DSP 28 is fed to a controller...Controller 30 operably communicates with a user interface 32 and a buffer storage memory 34. The controller 30 acts to interface the DSP 28 with a UHF radio 36 and radio antenna 38 for transmission of physiological data to base station 14. UHF radio 36 also acts to receive signals including commands from base station 14...a user input 33 such as an RS 232 interface thereby [enables] communication of further data to controller 30. For example, input 33 can be used to incorporate further sensors into the system such as a pulse oximeter, data from which can be incorporated by controller 30 into the signal transmitted at antenna 38 as appropriate." Place col. 5, lines 15-31.

Adding such a component would increase cost and complexity, undermining Marinelli's "desirable characteristics of being economical," Marinelli col. 1, line 58. We thus submit that there is no suggestion or motivation to add Place's extra component to Marinelli. For this reason alone, Marinelli in view of Place does not establish *prima facie* obviousness over claim 21. See MPEP §2142. However, Marinelli in view of Place also does not teach or suggest mobile sensing units for attachment with participants in a competitive event, or transmitting data representing a performance metric, as recited in the '678 Application. Marinelli's measuring device attaches to an object. Place's signal transfer unit is worn by a patient, but it does not measure or transmit performance metrics. Rather, Place monitors physiological data such as breathing sounds. Thus, respectfully, the Examiner's 103 rejection again fails.

Although Applicants believe claim 21 allowable "as is," in order to advance prosecution of the '678 Application, claim 21 is amended to clarify spatial relationships of the claim elements. Claim 21 now recites:

- (A) a base station for displaying at least one performance metric;
- (B) one or more mobile sensing units for attachment with participants in a competitive event *within a competitive event area*, and for transmitting wireless data representing at least one performance metric; and
- (C) at least one relay unit *for placement proximate to the competitive event area, the at least one relay unit being remote from the mobile sensing unit and the base station*, for receiving the wireless data representing at least one performance metric from the sensing units and for wirelessly transmitting said received data to the base station.

As noted, Marinelli does not teach a relay unit, and there would be no motivation to combine Place's signal transfer unit 12 with Marinelli. In addition, the combination does not teach or suggest a relay unit for placement proximate to a competitive event area and remote from the mobile sensing units and the base station. In fact, Place (which is relied upon for a relay unit), teaches away from a remote relay unit. Place recites:

"One object of the invention is to provide a portable signal transfer unit operably in close proximity to or wearable by the patient remote from but proximal a physiological sensor, for example, by attachment to an external item

of clothing worn by the patient, such as a belt. Another object is to provide one such unit adapted for use with multiple sensors, for example, located on different parts of a patient's body such as on arms, chest and legs." col. 1, lines 38-47; and

"The signal transfer unit 12 is designed to be locatable near a physiological sensor device 10 locatable on the chest or other part of a mammalian subject. Accordingly, a suitable location is on a belt around a patient's waist." col. 5, lines 7-10, emphasis added;

"Typically receiver 26 would be expected to perform well with a 14 microvolt rms signal which might suitably be derived from an inductance coil transmitter located *on sensor device 10 within about one meter of signal transfer unit 12.*" col. 6, lines 6-10, emphasis added; and

"Accordingly, *the patient is required to check that the signal transfer unit 21 is not too far away from device 10.*" col. 10, lines 9-12, emphasis added.

Furthermore, Place incorporates by reference U.S. patent application Ser. No. 09/292,405 (now US 6,416,471, hereinafter, "Kumar '471"), which also describes the transfer unit as being close to the patient, particularly, as "a small signal transfer unit that can either be worn by the patient, c.g., on his or her belt, or positioned nearby (*within approximately 1.5 meters*), e.g., on a desk or chair or at the bedside." Kumar '471 col. 4, lines 53-56, emphasis added. Kumar '471 further indicates that the signal transfer unit is only wireless when it is proximate the patient:

"The signal transfer unit 20 need not be carried by the patient at all times, but must be within communications range of the sensor band 10 (*unless a wire is used*) in order to receive the transmitted vital signs data." Kumar '471 col. 10, lines 10-13, emphasis added.

Clearly, Place's transfer unit is meant to be proximate (ideally worn by or within 1-1.5 meters of) the patient, and thus proximate the sensor device 10. Further evidence of required proximity between the sensor and the transfer unit may be found at Kumar '471 col. 11, lines 12-24, describing the need for the patient to physically interact with the signal transfer unit at the start of each monitoring session and at the end of each day. Again, Kumar '471 is incorporated by reference into Place.

On the other hand, Applicants' relay unit is remote from the one or more mobile sensing units, and proximate to an event arena. See, c.g., FIG. 2A showing relay units 211, 212...219

proximate to an event arena 200, such as a snowy hill, in which event participants, e.g., snowboarders wearing sensors, compete or perform:

“FIG. 2A illustrates a typical configuration used at a sporting event (e.g., a snowboard event) performed in event arena 200 (e.g., a snowy hill). A series of n relay units 211-219, where n is 0 or greater (0 meaning performance information is sent directly to base station 205), are used to receive transmitted performance information generated by a sensing unit (such as sensing unit 130 shown in FIG. 1D), which is relayed to a base station 205 for display on display and/or scoreboard 206, processing, and/or retransmission to another location.” Specification p. 13, ¶1; FIG. 2A.

It is well known that event areas for snow sports are larger than the people that compete within them. For example, an Olympic-size half-pipe (super pipe) is about 450 feet long, with close to a 20-foot transition between walls that are about 18 feet high. Place's signal transfer unit simply would not work proximate to such a venue, since it must be very close to the wearer in order to pick up signals from physiological sensors, and since the wearer, in competition, would utilize as much of the half-pipe as possible. Place indicates that wires must be used to communicate data between a sensor and the transfer unit if the two are more than 1-1.5 meters apart. See above. However, once wires are employed, Marinelli in view of Place fails to teach or suggest a relay unit that receives wireless data from a sensor unit. Furthermore, for obvious safety reasons, it is impractical and ill-advised to connect wires to a twisting, turning and even somersaulting competitor.

We have shown that Marinelli in view of Place cannot and does not teach or suggest each and every element of claim 21. The combination at least fails to teach or suggest: (1) mobile sensing units attached to participants in a competitive event within a competitive event area; (2) or a relay unit for placement proximate to the competitive event area and remote from the mobile sensing unit and the base station, for receiving wireless data from the sensing units. Indeed, as we have shown, Place teaches against these claim elements. And, for reasons including increased cost and complexity (which the Examiner asserts against, and which counter Marinelli's objectives), there is no motivation to combine the patents. The § 103 rejection therefore fails, since *prima facie* obviousness is not established.

Claims 27-31 depend from claim 21, and benefit from like argument. Courts have ruled that if an independent claim is nonobvious under 35 U.S.C. § 103, then any claim depending therefrom is nonobvious. In re Fine, 837 F.2d 1071.5 USPQ2d 1596 (Fed. Cir. 1988). However, these claims have additional reasons for patentability.

For example, claim 27 recites a display device electrically coupled to the base station, and wherein the base station displays a performance metric on the display device. The Examiner contends that Marinelli's monitor unit, recited at col. 2, lines 53-65, is the same as Applicants' display device. Respectfully, the Examiner has already argued that Marinelli's monitor unit is equivalent to a base station. Note that Applicants' display device is recited as an additional component (e.g., claim 27 recites the system of claim 1, which includes a base station, "further comprising" a display device). Where is this additional component in Marinelli? We submit that it cannot be found. However, even if the Examiner persists in his line of reasoning, Marinelli in view of Place do not teach or suggest a base station display (or even a base station) in the context of claim 21.

The limitations of claims 29-31 are also not taught or suggested by the Marinelli/Place combination, in the context of base claim 21. We accordingly request withdrawal of the Examiner's rejection, and allowance of all of claims 21 and 27-31.

3. Claim Rejections – 35 U.S.C. §103

Marinelli/Place/Jones

Claim 22 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Marinelli in view of Place, and further in view of U.S. Patent No. 6,292,213 (hereinafter, "Jones"). We must again respectfully disagree with and traverse the Examiner's rejection. Again, to establish *prima facie* obviousness, 35 U.S.C. §103 requires that each and every limitation of the claim elements be taught or suggested. However, Marinelli, Place and Jones cannot and do not meet this requirement, whether taken alone or in combination.

Claim 22 depends from claim 21, argued above. The Marinelli/Place combination does not teach or suggest every element of claim 22, and adding Jones does not remedy this failure. For example, Jones does not teach or suggest Applicants' sensing units, nor does Jones teach or suggest performance metrics, transmission or receipt (wireless or otherwise) of performance

metric data, relay units proximate to competitive event areas, or a remote base station that displays a performance metric. Rather, Jones recites micro video cameras that can be rented and worn by a user to capture that user's experience, e.g., on an amusement park ride. See Jones, Abstract.

Marinelli, Place and Jones, whether taken alone or in combination, do not render claim 21 *prima facie* obvious; therefore, claim 22 is also nonobvious. Furthermore, applying Jones appears to be an attempt to piecemeal-combine references. This is improper practice, since "In making the assessment of differences, section 103 specifically requires consideration of the claimed invention "as a whole." Inventions typically are new combinations of existing principles or features." *Env'tl. Designs, Ltd. v. Union Oil Co.*, 713 F.2d 693, 698 (Fed. Cir. 1983) (noting that "virtually all [inventions] are combinations of old elements.>"). **The "as a whole" instruction in title 35 prevents evaluation of the invention part by part. Without this important requirement, an obviousness assessment might break an invention into its component parts (A + B + C), then find a prior art reference containing A, another containing B, and another containing C, and on that basis alone declare the invention obvious. This form of hindsight reasoning, using the invention as a roadmap to find its prior art components, would discount the value of combining various existing features or principles in a new way to achieve a new result - often the very definition of invention.** *Ruiz v. A.B. Chance Co.*, 69 USPQ2d 1686 (CA FC 2004) (emphasis added).

We respectfully request withdrawal of the Examiner's rejection, and allowance of claim 22.

4. Claim Rejections – 35 U.S.C. §103

Marinelli/Place/Boyd

Given the cancellation of claim 24, claim 23 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Marinelli in view of Place and further in view of U.S. Patent No. 5,023,727 (hereinafter, "Boyd"). We respectfully disagree with and traverse the Examiner's rejection, since *prima facie* obviousness is not established.

Claim 23 depends from claim 21, which recites that at least one relay unit wirelessly transmits received (performance) data to a base station. Claim 23 recites that the at least one relay unit is at least two relay units. Thus, at least two relay units wirelessly transmit data to a base station.

Marinelli does not teach relay units, at all. And Place teaches against more than one relay unit transmitting to a single base station, by incorporating by reference a patent that recites "In a presently preferred embodiment, a base station unit 30 can only receive signals from a single signal transfer unit 20," Kumar '471 col. 12, lines 8-10.

The Examiner thus relies upon Boyd to supply two relay stations. However, as noted, the hindsight combination of Boyd with Marinelli and Place teaches against itself, in that Place recites a single signal transfer unit sending signals to a single base station. Furthermore, Boyd is not analogous art. It concerns a system for producing a substantially continuous composite signal. Further evidence of non-analogy may be found by comparing the U.S. Patent Office Classifications assigned to Boyd and the '678 Application. The '678 Application is assigned class 702, defined at the USPTO Classification page as "data processing: measuring, calibrating, or testing," and subclass 182, "performance or efficiency evaluation." On the other hand, Boyd is categorized in 358/310, described on the Classification page as "facsimile and static presentation processing" / "electrostatic or electrolytic...subject matter wherein the picture is created by selectively applying a varying charge pattern to the record carrier in accordance with the picture signal and permanently affixing charged toner particles in amounts dependent on the charge, or by transmitting a current through the record carrier to selectively discolor the record."

These differing classifications clearly evidence non-analogy. We submit that Boyd cannot be relied upon as a reference under 35 U.S.C. §103(a). Pursuant MPEP §2144, we ask the Examiner for evidence supporting his allegation that "it would be obvious to one having ordinary skill....to incorporate Boyd ... into Marinelli in view of Place et al.'s invention because it would provide two relays...to the base station."

However, even if the Examiner is able to provide such evidence, the combination of Marinelli, Place and Boyd still does not disclose the elements of base claim 21. And, if base claim 21 is nonobvious, then claim 23 is also nonobvious. See *In re Fine*, quoted above.

For at least the above reasons, we respectfully request withdrawal of the Examiner's rejection, and allowance of claim 23.

5. Claim Rejections – 35 U.S.C. §103

Marinelli/Place/Boyd/Eden

Claim 25 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Marinelli in view of Place and Boyd, and further in view of U.S. Patent No. 5,993,335 (hereinafter, "Eden"). We must again respectfully disagree and traverse the Examiner's rejection. We have shown that Marinelli, Place and Boyd do not (and can not) teach or suggest each and every element of claim 21. Adding Eden does not remedy this failure.

Eden is seemingly cited, in hindsight, merely because it discloses a game (a rollercross game). In particular, Eden recites a method of playing a game on a rink. Eden is concerned with rules of the rollercross game, see, e.g., rules 1-68 at col. 3, line 65 – col. 18, line 4. However, Eden does not mention or depict any of the claim 21 elements missing from Marinelli, Place and Boyd. For example, Eden does not provide a sensor unit, a relay station, a base station or transmission/receipt of any performance metric/related data, wireless or otherwise. Since Marinelli, Place, Boyd and Eden cannot and do not teach or suggest each and every element of base claim 21, claim 25 is likewise nonobvious. See *In re Fine*, above.

Eden is also nonanalogous art – evidence of this may be found in comparing the classification assigned to Eden vs. that assigned to the '678 Application. Again, the '678 Application is currently classified in 702/182, described above. In contrast, Eden occupies 473/471: "games using tangible projectile" / "for game in which goal or target is peripherally located aperture or pocket." This is clearly different from "data processing" / "performance or efficiency evaluation". See Definition of 702/182, above. However, if the Examiner persists in citing Eden, we request evidence that combining Eden with Marinelli, Place and Boyd is somehow obvious to a skilled artisan (MPEP §2144). We plainly disagree, and submit that the current combination is a blatant piecemeal combination, based on hindsight. Withdrawal of the Examiner's rejection, and allowance of claim 25, are therefore respectfully requested.

6. Claim Rejections – 35 U.S.C. §103

Marinelli/Place/Shea

Claim 26 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Marinelli in view of Place and further in view of U.S. Patent No. 6,430,453 (hereinafter, "Shea"). However, Marinelli, Place and Shea cannot and do not establish *prima facie* obviousness over claim 26, since they do not teach or suggest every element of the claim.

Furthermore, like Boyd (see above), Shea is apparently cited merely because it discloses a game, this time, a bowling game system that electronically determines how many bowling pins have fallen, and then sends scoring data based upon pin falls to a bowling center. Per MPEP §2144, we request evidence that it would have been obvious to combine Shea with Marinelli and Place. We contend that such evidence cannot be provided, since the noted combination appears to be a piecemeal attempt to pick and choose elements of Applicants' claims, in hindsight. However, even if such evidence is provided, the combination of Shea with Marinelli and Place simply does not disclose the elements of base claim 21, and therefore cannot render dependent claim 26 *prima facie* obvious.

We have shown that Marinelli and Place, taken alone or in combination, can not and do not teach or suggest all of the elements of claim 21. Shea does not teach or suggest the claim elements missing from the Marinelli/Place combination. For example, Shea fails at least to teach or suggest sensing units for attachment with participants in a competitive event. Rather, Shea recites "pin fall detectors of [mechanical] pinsetters 20a, 20b." Shea col. 2, lines 56-57. There is no teaching or suggestion of measuring any data of a participant.

Shea also, clearly, does not teach or suggest transmitting or receiving wireless data. Rather, "Pinsetters 20a are connected to lane pair control system 15a and pinsetters 20b are connected to lane pair control system 15b." col. 2, lines 47-49. "All of the lane pair control systems of bowling center 10a...are connected to a system control computer 30a over communication line 60a and all of the lane pair control systems of bowling center 10b...are connected to system control computer 30b over communication line 60b." Shea col. 3, lines 10-15. Computers 30a, 30b are then connected to video/audio control systems "over local communication lines 65a, 65b" and the video/audio control systems are in turn "connected over video-audio distribution lines 75a, 75b to each of the lane pair control systems." Shea col. 3,

lines 21-25. Shea pointedly, relies upon lines connecting various components of his bowling center system. See Shea FIG. 1.

Claim 21 remains nonobvious in view of Marinelli, Place and Shea. Claim 26 depends from claim 21 and is thus nonobvious as well. Withdrawal of the Examiner's rejection, and allowance of claim 26, are respectfully requested.

7. Claim Rejections – 35 U.S.C. §103

Marinelli/Place/Mickelson

Claims 32-34 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Marinelli in view of Place, and further in view of U.S. Patent No. 6,163,021 (hereinafter, "Mickelson"). However, the cited patents do not teach or suggest each and every element of claims 32-34. We must therefore traverse and disagree with the Examiner's rejection, once more.

First, again, Marinelli in view of Place does not teach the elements of claim 21. For example, the combination fails to provide a relay unit and a base station as required in claim 21 (there is no motivation to add Place's transfer unit to Marinelli, given the increases in cost and complexity that it would undoubtedly bring – see claim 21 arguments). In another example, Marinelli in view of Place teaches against wireless transmission of performance data to a relay unit proximate to an event area and remote from a sensor and a base. See quotes from Place specifying that sensors and a transfer unit are connected by wire if not proximate (e.g., within 1.5 meters) of one another, at the claim 21 arguments, above.

Mickelson also does not teach or suggest these elements. In Mickelson, spin parameters and even GPS information, appear to be communicated between parts of a navigation system along communication lines. For example, Mickelson does not provide a relay unit proximate to an event area, that receives wireless data from a sensor. Instead, "signal processing system 15 may have output signals on a data link provided on communication line 57 to a transmission antenna 18". Mickelson col. 3, lines 51-53. Further, Mickelson does not recite sensors for attachment to a participant in an event, nor does Mickelson measure, transmit or receive performance data of a participant.

In addition, Mickelson is nonanalogous art, and therefore cannot sustain an obviousness-type rejection. Mickelson is related to a navigation system for spinning projectiles (class 244/3.2: "aeronautics and astronautics"/ "inertial: subject matter in which automatic guidance is achieved by means of self-contained automatic controlling devices that respond to acceleration producing forces." This is different from the field of the '678 Application. See arguments at subsections 4-6, above.

Not only is the hindsight combination of Marinelli with Place and non-analogous Mickelson improper, the combination does not teach or suggest all the elements of claim 21 and hence cannot render claims 32-34 *prima facie* obvious. We thus respectfully request withdrawal of the Examiner's rejection, and allowance of claims 32-34.

Conclusion

The amendments and arguments above address each rejection listed in the Office Action of 18 September 2006. We respectfully submit that all of claims 21-23 and 25-34 patentably distinguish over the art of record, and we solicit a Notice of Allowance for all of these claims. Should any issues remain outstanding, the Examiner is encouraged to telephone the undersigned.

This Amendment and Response is submitted with a Petition for Two Months' Extension of Time, along with authorization to charge the required extension fee to Deposit Account No. 21-0600. No further fees are believed due. However, the Commissioner is hereby authorized to charge any fees which may be deemed necessary in connection with this Amendment and Response to Deposit Account Number 12-0600.

Respectfully submitted,

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